NIH TECHNOLOGY TRANSFER CENTER
of the National Cancer Institute

Zirconium-89 PET Imaging Agent for Cancer

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Keywords: Imaging, Immunoassays, Imaging/Microscopy, Cancer / Neoplasm: Cancer, Small Molecule, PET, imaging agent, zirconium-89

Summary:
This technology is a new generation of rationally designed chelating agents that improve the complexation of Zirconium-89 for PET imaging of cancers.

Description of Technology:
Researchers at the NCI Radiation Oncology Branch and NIH CIT Center for Molecular Modeling developed a tetrahydroxamate chelation technology that provides a more-stable Zr-89 complex as an immuno-PET cancer imaging agent. In either the linear or the macrocyclic form, the tetrahydroxamate complexes exhibit greater stability as chelating agents compared to Zr-89 complexed to the siderophore desferrioxamine B (DFB), a trihydroxamate, which represents the current state of the art chemistry and the agent currently in clinical use. In the Zr-89-DFB imaging agents, Zr-89 dissociates from the chelate, resulting in an increasing radioisotope accumulation in the bone 2-3 days after injection. In vitro studies demonstrate the tetrahydroxamate-chelated Zr-89 remained kinetically inert for seven or more days, thereby reducing the amount of Zr-89 that is released compared to the complex containing DFB.

Potential Commercial Applications:
PET imaging, especially for cancer and in particular Immuno-PET imaging

Competitive Advantages:
-- High stability with low toxicity

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Development Stage:
-- Prototype

Publications:
Guerard F, et al. [PMID 23250287]; Guerard F, et al. [PMID 2470517]

Patent Status:
US (filed): US, Application No. 61/779,016 filed 13 Mar 2013
Foreign (filed): EP in preparation

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Related Opportunities:
E-194-2007/0, E-226-2006/0, E-067-1990/0